CLAIMS

1. A cartridge for a liquid, which can be connected to a dispensing device which includes an upper portion for receiving the cartridge and a lower portion which can be pushed over the connected cartridge, and the upper portion of the device is provided with a connection portion for the cartridge and with a dispensing connection portion for drawing off the liquid, wherein

- the cartridge (1) is a three-shell container and comprises an outer stiff casing (4), a container (5) which is stable in respect of shape and which is disposed in the casing, and a collapsible bag (6) which is arranged in the container that is stable in respect of shape and which contains the liquid, and
- the stiff casing has a bottom provided with an opening (22), and
- the container which is stable in respect of shape is provided with an opening (14) and closed by a stopper (7), and
- the stopper is provided with an insertion connection portion (17) which forms a sealingly closing, centred guide means for the dispensing connection portion, and
- the stopper is non-releasably connected by the casing (4) to the container which is stable in respect of shape, and
- the cartridge (1) is releasably connected to the connection portion (2) on the upper portion of the dispensing device.

2. A cartridge according to claim 1 wherein

- the cartridge (1) is releasably connected to the connection portion (2) by means of a plug connection.

3. A cartridge according to claim 1 wherein

- the cartridge (1) is releasably connected to the connection portion (2) by means of a screw connection or a bayonet connection.

4. A cartridge according to claims 1 to 3 wherein

- the stopper (7), preferably of a thermoplastic material, is connected to the container (5) which is stable in respect of shape, in force-locking and positively locking relationship, by means of a snap connection (8).

5. A cartridge according to claims 1 to 3 wherein

- the stopper (7) comprising a thermoplastic material is non-releasably connected to the container (5) which is stable in respect of shape and which comprises a thermoplastic material by means of a welded join with merging of the materials.

6. A cartridge according to claim 1 to 5 wherein

- the stopper (7) is provided in the insertion connection portion (17) with a funnel-shaped centred guide means which possibly includes guide ribs (7a).

7. A cartridge according to claims 1 to 6 wherein

- the stopper (7) is provided with a press fit (17a) as sealingly closing guide means, for the dispensing connection portion.

8. A cartridge according to claims 1 to 7 wherein

- the stopper (7) is provided at the end of the insertion connection portion with a diaphragm (18) which is preferably disposed inclinedly with respect to the axis of the insertion connection portion.

9. A cartridge according to claims 1 to 8 wherein

- disposed between the upper edge of the container which is stable in respect of shape and the inside of the stopper is a sealing disc (9) which is possibly provided with sealing beads.

10. A cartridge according to claims 1 to 9 wherein

- the inside of the stopper is provided with a sealing lip (10) or with a plurality of sealing lips.

11. A cartridge according to claims 1 to 10 wherein

- the stiff casing (4) - apart from the opening thereof - is diffusion-tight.

12. A cartridge according to claims 1 to 11 wherein

- the stiff casing (4) is provided with a plurality of inwardly projecting projections (4a).

13. A cartridge according to claims 1 to 12 wherein

- the stiff casing (4) is in one piece.

14. A cartridge according to claims 1 to 12 wherein

- the stiff casing is in two pieces.

15. A cartridge according to claims 1 to 14 wherein

- the stiff casing (4) is a deep-drawn metal casing, preferably of aluminium.

16. A cartridge according to claims 1 to 14 wherein

- the stiff casing (4) comprises a plastic material, preferably a thermoplastic material.

17. A cartridge according to claims 1 to 16 wherein

- the stiff casing (4) is provided at its bottom with a projecting bead (20).

18. A cartridge according to claims 1 to 17 wherein

- the stiff casing (4) has a recess in its bottom.

19. A cartridge according to claims 1 to 18 wherein

- the stiff casing (4) is provided within the recess with an opening (22) whose diameter in the case of a circular cross-section is between 0.1 millimeter and 5 millimeters.

20. A cartridge according to claims 1 to 18 wherein

- the stiff casing (4) is provided within the recess with an insert (26) including an opening, preferably in the form of a micro-opening (27), which communicates with the opening (28) in the bottom of the stiff casing, and which in the case of a circular cross-section is of a diameter of between 10 µm and 500 µm and is of a length of between 100 µm and 5000 µm.

21. A cartridge according to claims 1 to 20 wherein

- the insert (26) is provided with a filter (25) in front of the micro-opening (27).

22. A cartridge according to claims 1 to 21 wherein

- the stiff casing (4) of metal is provided with at least one peripherally extending crease (12) which embraces the stopper (7) in force-locking and positively locking relationship.

23. A cartridge according to claims 1 to 21 wherein

- the stiff casing (4) of thermoplastic material is connected to the stopper (7) by means of a welded join with merging of materials.

24. A cartridge according to claims 1 to 23 wherein

- the stiff casing (4) is provided in its upper part with a peripherally extending groove (11) which embraces the lower edge of the stopper (7).

25. A cartridge according to claims 1 to 24 wherein

- the stiff casing (4) is provided in its upper part with a flanged-over portion (13) which embraces the upper edge of the stopper (7).

26. A cartridge according to claims 1 to 25 wherein

- the cartridge is sealed in the region of the stopper (7) by a - possibly diffusion-tight - sealing foil (16).

27. A cartridge according to claims 1 to 26 wherein

- the stiff casing (4) is sealed on the outside of its bottom by a - possibly diffusion-tight - sealing foil (23).

28. A cartridge according to claims 1 to 27 wherein

- provided in the central region of the sealing foil (23) on the outside of the bottom of the stiff casing (4) is a free space (24) which is covered by the sealing foil.

29. A cartridge according to claims 1 to 28

- which can be pulled out of the dispensing device by means of a withdrawal aid (30) which can be fitted on behind the projecting bead (20).

30. A releasable connection according to claim 1 between a cartridge and a connection portion of the dispensing device, wherein

- the connection portion (2) is provided with snap hooks (19) which engage into the peripherally extending groove (11) in the upper part of the stiff casing (4) after the cartridge has been pushed into the dispensing device.

31. A releasable connection between a cartridge and the connection portion of the dispensing device, wherein

- the connection portion (2) is provided with snap hooks (19) which engage into a peripherally extending groove in the stopper (7) or in the container (5) which is stable in respect of shape, after the container which is stable in respect of shape has been pushed into the dispensing device.

32. A lower device portion which can be pushed on, according to claim 1, wherein

- the inside of the bottom of the lower device portion (3) is provided with a piercing device for the sealing foil (23) which is disposed on the underside of the bottom of the casing.

33. A cartridge according to claim 1 for an aqueous liquid, comprising a container (5) which is stable in respect of shape and which comprises polypropylene, with a stopper (7) of polypropylene and a collapsible bag (6) of polyethylene disposed in the container (5), wherein

- the stiff casing (4) comprises plastic material, preferably polypropylene, and

- the opening (22) in the bottom of the stiff casing (4) is a bore, and

- the stopper (7) for the container (5) which is stable in respect of shape is provided with an insertion connection portion (17) which is closed at its end by a diaphragm (18) inclined with respect to the axis of the insertion connection portion, and which forms a sealingly

closing, centred guide means, in the form of a press fit, for the dispensing connection portion (15), and which is connected by a snap connection to the container which is stable in respect of shape, and

- the releasable plug connection between the cartridge (1) and the connection portion (2) of the dispensing device is in the form of a snap connection in which there are provided in the connection portion (2) of the upper portion of the dispensing device snap hooks (19) which engage into the peripherally extending groove (11) in the upper region of the cartridge (1), and

- the inside of the bottom of the push-on portion (3) of the dispensing device is provided with the resilient piercing device (25) for the sealing foil (23) on the underside of the bottom of the casing.

34. A cartridge according to claim 1 for an alcoholic liquid, comprising a container (5) of polypropylene, which is stable in respect of shape, with a stopper of polypropylene and a collapsible bag (6) of polyethylene, which is disposed in the container (5), wherein

- the stiff casing (4) comprises metal, preferably aluminium, and

- the stopper (7) which is provided with an insertion connection portion (17) for the container (5) which is stable in respect of shape is closed at its end by a diaphragm (18) which is inclined with respect to the axis of the insertion connection portion, and

- the stopper (7) is provided with a sealingly closing, centred guide means, in the form of a press fit, for the dispensing connection portion (15), and

- the stopper (7) is non-releasably connected by the casing (4) to the container (5) which is stable in respect of shape, and

- the releasable plug connection between the cartridge (1) and the connection portion (2) of the dispensing device is in the form of a snap connection in which there are provided in the connection portion (2) of the

dispensing device snap hooks (19) which engage into the peripherally extending groove (11) in the upper region of the cartridge, and

- provided in the bottom of the stiff casing (4) is an inset (26) with a micro-opening (27) and the micro-opening communicates with a bore (28) in the stiff casing (4), and

- the inside of the bottom of the push-on portion (3) of the dispensing device is provided with the resilient piercing device (25) for the sealing foil (23) on the underside of the bottom of the casing.

35. A cartridge according to claims 1, 33 and 34 wherein

- the liquid contains a pharmacologically active substance.

36. A cartridge according to claims 1 and 33 to 35 for a medical liquid wherein

- the medical liquid contains one or more of the active substances Berotec (Fenoterol hydrobromide); 1-(3,5-dihydroxy-phenyl)-2-[[1-(4-hydroxy-benzyl)-ethyl]-amino]-ethanol hydrobromide), Atrovent (Ipratropium bromide), Berodual (combination of Fenoterol hydrobromide and Ipratropium bromide), Salbutamol, Salbutamol sulphate, Combivent, Oxivent (Oxitropium bromide), Ba 679 (Tiotropium bromide), BEA 2108 (di-(2-thienyl)-glycolic acid tropenol ester), Flunisolid, Budesonid and Beclomethasone.

37. Use of the cartridge according to claims 1 to 36 containing a medical liquid for producing an aerosol by means of an atomiser.

38. Use of the cartridge according to claims 1 to 37 containing a medical liquid for producing an inhalable aerosol for the treatment of illnesses.

ADD A1